

Abstract of the Disclosure

A clip of a self-closing type is used for valve repair. The clip is generally U-shaped with two end points separated from each other when it is constrained to be in an open configuration, but tends to coil up to assume its natural closed configuration if the constraint is removed. At least one end point is connected through a suture to a tissue-penetrating needle. A needle holder has an outer tube and an inner member which has a slit at the front and is slidable inside the outer tube. They are designed such that the slit can grab the needle tightly or release it as the inner member is moved backward or forward with respect to the outer tube. With the needle secured at the front, the needle holder is passed through a cannula inserted through an incision and the needle penetrates the leaflets such that the clip can be positioned with its end points hooked to the pair of leaflets to be stitched together. If the clip is released from the suture thereafter, it tends to coil up, reducing the distance between the end points and pulling the leaflets together. A double-arm clip assembly with each of the end points of the clip attached through a suture to a separate needle may be similarly used for valve repair. Such a double-arm clip assembly may contain two of such clips mutually connected by means of a flexible connector such that two leaflets are held together by the connector, with the two clips each anchored to a corresponding one of the leaflets.